

# Review for Chapter 2 Test

Show all of your work. **No work, no credit!** If you are using a calculator, make sure that you show the steps you are taking to show your work.

1) Solve each problem for the variable (the unknown).

a)  $\frac{3030}{200} = \frac{L}{30} \cdot 30$

b)  $\frac{5}{6} = \frac{135}{m}$

c)  $\frac{80}{140} = \frac{200}{k}$

$L = 4.5$

$\frac{135}{5} = \frac{m}{135} \cdot 135$

$\frac{200}{80} = \frac{k}{200} \cdot 200$

$k = 350$

d)  $28x = 168$

e)  $105x = 20(0.25)$

f)  $48 = \frac{x}{12} \cdot 12$

$x = 6$

$x = 5$

$x = 576$

Set problems 2, 3, and 4 into proportions and solve:

2) There are 2990 students buying tickets for the dance. Thirty-six percent of the students are going to wear costumes. How many students are going to wear costumes?

$2990 \cdot \frac{36}{100} = \frac{x}{2990} \cdot 2990$

$x = 1076.4 \approx 1076 \text{ students}$

3) Ninety percent of the valedictorians in high school are swimmers. If there are 15 valedictorian swimmers, how many valedictorians are there?

$\frac{90}{100} = \frac{15}{x} \cdot \frac{100}{90} = \frac{x}{15} \cdot 15$

$x = 16.67 \approx 17 \text{ valedictorians}$

4) My dog, George, went to obedience training and scored 399 of the 420 points available. What percentage of the points did George earn?

$100 \cdot \frac{x}{100} = \frac{399}{420} \cdot 100$

$x = 95\%$

5) Use these conversion factors to convert units.

1 inch = 2.54 centimeters	1 foot = 0.305 meter	1 foot = 12 inches
5,280 feet = 1 mile	1 yard = 3 feet	\$350,000 = 1 amazing house

a) How many amazing houses can I buy if I have \$1,400,000?

$\frac{\$1,400,000}{\$350,000} \cdot \frac{1 \text{ house}}{1} = 4 \text{ houses}$

b) How many inches are in 2.5 miles?

$2.5 \text{ mi} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} = 158400 \text{ in}$

c) How many centimeters are in one yard?

$1 \text{ yd} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{2.54 \text{ cm}}{1 \text{ in}} = 91.44 \text{ cm}$

d) If I am driving 35 mph, how many feet per second is that?

$\frac{35 \text{ mph}}{1 \text{ hr}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \frac{184800}{3600} = 51.33 \text{ ft/sec}$

- 6) What is direct variation? Describe this in your own words using CSIQ  
(Complete Sentences, Including the Question)

A direct variation is an equation of the form  
 $y = kx$  where  $k$  is any integer

- 7) What is inverse variation? Describe this in your own words using CSIQ  
(Complete Sentences, Including the Question)

An indirect variation is an equation of the form  
 $y = \frac{k}{x}$  where  $k$  is any integer

- 8) Label the following as direct variation, inverse variation, or neither:

a)  $y = \frac{x}{8}$

Direct

$\Rightarrow y = \frac{1}{8}x$  ( $k = \frac{1}{8}$ )

b)  $y = 8x$

Direct

$k = 8$

c)  $y = 8x - 8$

Neither

d)  $y = \frac{8}{x}$

$y = \frac{8}{x}$   $k = 8$

Indirect

- 9) Evaluate each of the following expressions: (3 points each)

a.  $10(-8+10) + 20$

$10(2) + 20$

$20 + 20$

40

b.  $\frac{(1-1)(2)}{10} + 4 \cdot 200$

$\frac{0(2)}{10} + 4 \cdot 200$

$\frac{0}{10} + 800$

800

c)  $450 - \frac{(10+200)}{(100-95)}$

d)  $544 + 3 \cdot 2 + 1$

$544 + 6 + 1$

$550 + 1$

551

$450 - \frac{210}{5}$

$450 - 42 = 408$

- 10) To some number, add 18, divide by 3, add finally add 50. Your final answer is 57. What was your original number? Write an equation and solve it! Use an undo chart if you want!

Description	Expression	Undo	Result
Picked a number.	$x$		
add 18	$x + 18$	$-18$	<u>3</u>
div. by 3	$\frac{x+18}{3}$	$\times 3$	<u>4</u>
add 50	$\frac{x+18}{3} + 50$	$-50$	<u>4</u>

$\frac{x+18}{3} + 50 = 57$

$-50$

$-50$

$\frac{x+18}{3} = 7$

$\times 3$

$x + 18 = 21$

$-18$

-18

- 11) To some number, subtract 12, multiply by 5, divide by 4, and finally subtract 20. Your final answer is 5. What was the original number?

Description	Expression	Undo	Result
Picked a number.	$x$		
Subt 12	$x-12$	$+12$	$\boxed{32}$
Mult 5	$5(x-12)$	$\div 5$	$\frac{32}{5}$
Div 4	$\frac{5(x-12)}{4}$	$\times 4$	$25$
Subt 20	$\frac{5(x-12)}{4} - 20$	$+20$	$5$

Solve using the "undo" method. Use a chart if you want.

12)  $2(x-7)+2=14$

Description	Expression	Undo	Result
Picked a number.	$x$		
Subt 7	$x-7$	$+7$	$\boxed{13}$
Mult 2	$2(x-7)$	$\div 2$	$12$
Add 2	$2(x-7)+2$	$-2$	$14$

13)  $\frac{2x+4}{3}+6=8$

Description	Expression	Undo	Result
Picked a number.	$x$		
Mult 2	$2x$	$\div 2$	$\boxed{1}$
Add 4	$2x+4$	$-4$	$6$
Div 3	$\frac{2x+4}{3}$	$\times 3$	$4$
Add 6	$\frac{2x+4}{3}+6$	$-6$	$8$

$$\frac{5(x-12)}{4} - 20 = 5$$

$$+20 \quad +20$$

$$4 \cdot \frac{5(x-12)}{4} = 25 \cdot 4$$

$$\frac{5(x-12)}{5} = 100$$

$$x-12=20$$

$$+12 \quad +12$$

$$\boxed{x=32}$$

$$2(x-7)+2=14$$

$$-2 \quad -2$$

$$\frac{2(x-7)}{2} = \frac{12}{2}$$

$$x-7=6$$

$$+7 \quad +7$$

$$\boxed{x=13}$$

$$\frac{2x+4}{3} + 6 = 8$$

$$-6 \quad -6$$

$$3 \cdot \frac{2x+4}{3} = 2 \cdot 3$$

$$2x+4=6$$

$$-4 \quad -4$$

$$2x=2$$

$$\frac{2}{2} \quad \frac{2}{2}$$

$$\boxed{x=1}$$

14) Use the following table to answer the questions.

U. S. dollars	Euros	\$/Euro
15	10.12	1.5
25	16.86	1.5
35	26.61	1.3
50	33.73	1.5

- Enter the data into your calculator as  $L_1$  and  $L_2$ .
- Find the ratio of  $\frac{L_1}{L_2}$  using your calculator.
- Round the ratio to the nearest  $10^{\text{th}}$  and write it in the last column of the chart. Include a title for the column.

- If you were to pick a representative ratio for this situation, what would you pick and why?

$\frac{1.5}{1}$  because it's the average

- What does the number you picked in the last question represent? What did you find?

how many \$s in 1 Euro. 1